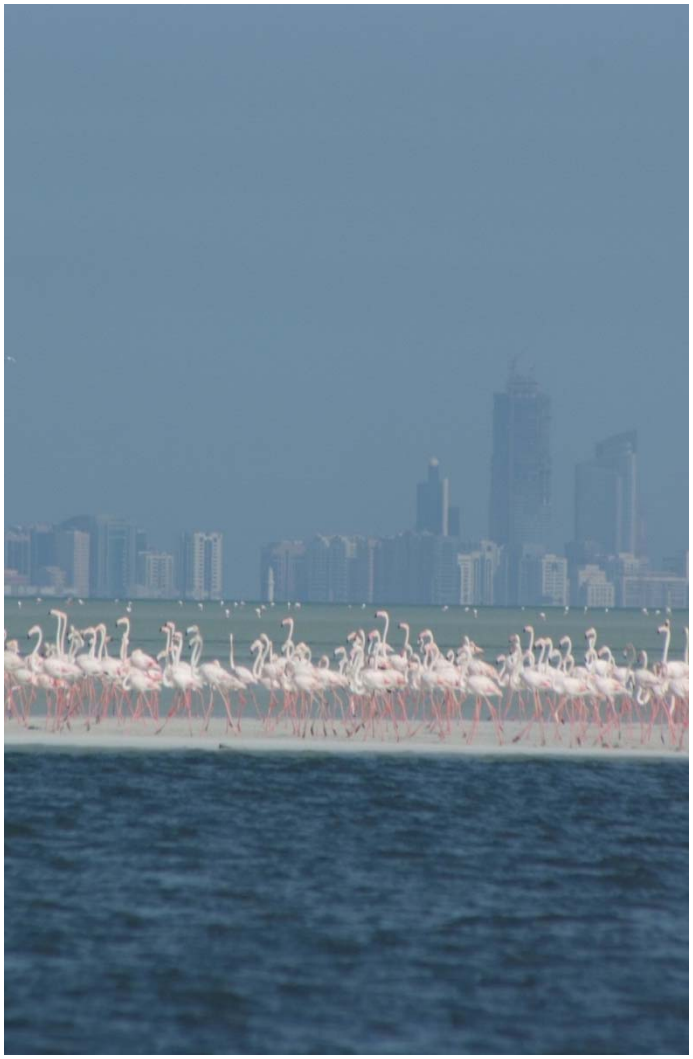

Bu Syayeef Flamingo and Waterbirds Sanctuary

A Proposal

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Bu Syayeef Flamingo and Waterbirds Sanctuary

A Proposal

1. INTRODUCTION

Despite the harshness of an arid environment, the Emirate of Abu Dhabi supports relatively rich array of terrestrial and marine wildlife. This is largely due to variety of habitats present in the terrestrial and marine environments of the Emirate. Some of the key areas and habitats in the Emirate have been protected; however there are several important areas which need to be assigned formal protection in order to protect the rich biodiversity they support. This has become all the more important given the rapid pace of the development in the Emirate, which has considerably impacted some of the important and biodiversity rich areas. Bu Syayeef is one such area which is of high conservation value due to presence of a microcosm of different habitats and an equally impressive and important set of species. The tidal mudflats and associated mangroves are home to many species of wildlife, more particularly to the migratory and resident bird species. The area came to prominence in 2009, when Greater Flamingo bred in the area, only third such successful breeding event in the country and the area was recommended to be declared as Flamingo and waterbirds sanctuary (Javed et al., 2009).

Protected areas are the foundation of many conservation strategies and are effective tool in maintaining biodiversity. Globally the network of protected area still has extensive gaps in representing rare and endangered species (Rodrigues et al 2004a). This is often due the bias of establishing protected areas in the land 'no body wants' i.e. low productivity and poor accessibility (Visconti et al. *In Press*). Development of a comprehensive, representative and integrated network of protected areas (3.3.1) is one of the key objectives of the EAD Strategy to take effective action to protect and enhance ecosystems and to support species conservation (EAD Strategy). Although the Emirate of Abu Dhabi supports three terrestrial protected areas and two marine protected areas, covering approximately 13% and % of the total geographical area, the element of representativeness still remains a weakness of the current PA system. It is thus imperative to create more such areas which are representatives of unique and important habitats and can potentially protect key terrestrial and marine habitats in the Emirate and the species they support. This is also in line with the Environment 2030 objective 4.1.1. '*to ensure conservation of key representative terrestrial and marine habitats in the Emirate'*.

As a follow-up to that recommendation (Javed et al., 2009) and also in recognition of the importance of the area, the current proposal has been prepared to ensure that the area is protected formally to protect the ecological values which may also potentially provide an opportunity for nature based tourism in the close vicinity to Abu Dhabi. We used current ecological information, particularly on birds from regular monitoring since 2009 and satellite tracking of flamingos and use of the key breeding and resting sites for flamingos and several other important species of birds as the basis of our argument. We used other existing conservation features i.e. mangroves, tidal mudflats and combined with the cost elements to do an objective analysis using Marxan to identify mostly suitable areas for conservation which will protect maximum conservation values of the area with least cost.

1.1 Purpose

The main purpose of this document is to present a strong and compelling argument for the establishment of Bu Syayeef Flamingo and Waterbirds Sanctuary, in the west Musaffah Channel of Abu Dhabi Emirate.

1.2 Justification

Bu Syayeef marine area, located close to the Abu Dhabi City is one of the most important areas for birds and marine diversity in the vicinity of the city. The area is of extreme biological importance due to the presence of large stretches of inter-tidal mudflats, mangroves and salt marshes which support a rich terrestrial and marine wildlife and in particular birds. The inter-tidal mudflats and mangroves support several thousand waterbirds during the winter. The proposed protected area would not fulfill the mandate of the Environment Agency- Abu Dhabi to establish protected areas under Article 3(15) and also as a Competent Authority under Federal Law # 24 of 1999. It will also fulfill obligations under international conventions such as CBD.

The proposed protected area falls under the following IUCN categorization of the establishment of the protected area:

Category IV – Habitat/Species Management Area*: protected area managed mainly for conservation through management intervention (Equivalent category in 1978 system as Nature Conservation Reserve/Managed Nature Reserve/Wildlife Sanctuary).*

The proposed area also qualifies for the Ramsar Site under Ramsar Convention (1973) under the following criteria:

Criterion 3: A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining biological diversity of a particular biogeographic region

Criterion 4: A wetland should be considered internationally important if it supports plan and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions.

2. SITE DESCRIPTION

2.1 Location

Bu Syayeef is located in the west Musaffah channel, just 20 km outside of the Abu City and is east of Maqta area. The area is nearly 10 km from Maqta Bridge along the channel Musaffah channel.

2.2. Geology and geomorphology

The general geology of the area is similar to the rest of the Abu Dhabi coast with Holocene sediments. The channels are north south tidal channels with mangroves that dissect a system of north-south linear islands (Alsharhan, 2008). There are no supra-tidal salt flats (*sabkhas*) to the southern side of the area; however extensive algal mats occur on the north and northwest side of the proposed protected area, close to Al Aryam.

2.3 Climate

Typical to the rest of the Emirate, the climate of the area is hot desert with high temperature and evaporation which exceeds the rainfall. Winter is the most unsettled period when active weather system can produce rain and strong winds, the frequency of which decreases in the spring with increased temperature (Bottomlay 2008).

2.4 Flora and Fauna

2.4.1Habitat types and Vegetation

Mangroves, *Avicenna marina* are one of the most important species of plants in the area and form the most prominent and important habitat in the proposed protected area. The inter-tidal mudflats, important for many bird species particularly for migrating shorebirds are also widespread. The area south of Aryam, close to the western side of the Bu Syayeef has very good salt marshes and cyanobacterial habitats.

The main natural habitat types identified includes- Coastal plains of drier ground with dwarf shrub/annuals, coastal sand sheets with dwarf shrubs and intertidal mudflats with mangroves. Coastal plains on well- drained ground behind the shoreline exhibit somewhat compact substrate and seem influenced to a certain degree of salinity. Intertidal mudflats, dominated by typical salt marsh vegetation with halophytic chenopods are present in the area. The area below the high tide mark is dominated by *Avicennia marina* and is accompanied by halophytic chenopods like *Halocnemum strobilaceum, Halopeplis perfoliata* and the parasitic species *Cistanche tubulosa*.

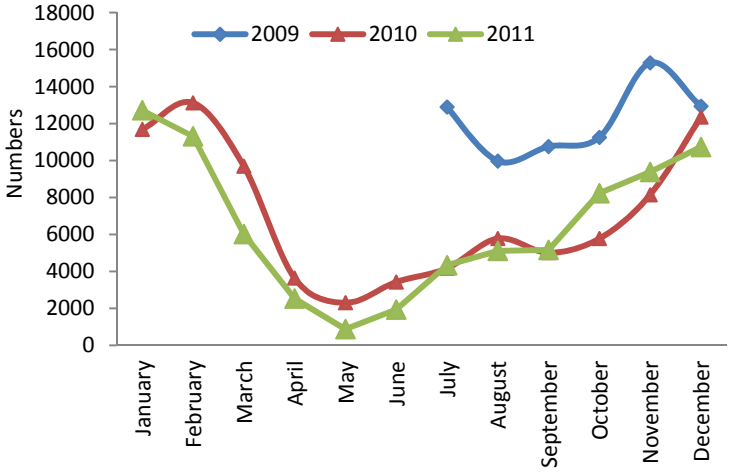
2.4.2 Reptiles and Invertebrates

The two main reptile species recorded in this area was the Short-nosed Lizard (*Mesalina brevirostri*) and Baluch Rock gecko (*Bunopus tuberculatus*), however it is quite likely that more species are present in the area. Invertebrate species comprise of about 10 insect orders such as Isoptera (termites), Hymenoptera (wasps, ants and bees), Coleoptera (beetles) Diptera (flies), Heteroptera (true bugs), Neuroptera (ant lions), Lepidoptera (butterflies and moths), Thysanoptera (thrips)). Arachnids (spiders) are also present in the area. Common insect species recorded were Green lacewing (*Chrysoperla carnea*), Grasshopper (*Pygromorpha conica*) and Eleven Spotted Lady Bird Beetle (*Coccinella unidecimpunctata*).

2.4.2 Birds and flamingo numbers

More than 50 species of birds are commonly seen in and around the area at any given time (Appendix 1). The area is one of the most important habitats in the Emirate for wintering waterbirds, due to the presence of extensive inter-tidal mudflats, providing feeding opportunities to numerous shorebirds. The area is particularly important for the wintering Greater flamingos which are present in significantly large numbers which could range from 15000-18000 individuals (Fig. 1). EAD's satellite tracking study has shown that the area is a key feeding and resting habitat for the Greater flamingos which subsequently bred in the area in 2009 (Javed et al. 2009).

Fig. 1 Monthly numbers of Greater Flamingos from the enitre area of Bu Syayeef from 2009 to 2011



Many nationally and regionally important species occur in the area either as resident or migratory species. Several pairs of the Western Reef Heron breed in the area and about 50-100 individuals can be regularly seen in the proposed area. Species such as Caspian Stern (*Sterna caspia*) and Saunder's Little Tern (*Sterna saundersii*) are also potentially breeding in the area. Few pairs of Osprey), Osprey (*Pandion haliaetus*), and White-cheeked Tern (*Sterna repressa*) also breed in the area. The Globally threatened Socotra Cormorant (*Phalacrocorax nigrogularis*), Greater spotted eagle (*Aquila clanga*) and the near-threatened (NT) Black-tailed Godwit (Limos limosa) occur in the area (Table 1).

Table 1 Status of some key bird species and their status in the proposed area

Species	Status in the UAE	Approximate numbers*	Conservation Importance
Greater Flamingo ***Phoenicopterus roseus***	Migratory, some reside. Successful breeding in 2009	15000-18000 i.e. nearly 70% of the total UAE numbers	Though not globally threatened, a flagship species. Bu Syayeef breeding in 2009 was largest in the Arabian Gulf
Western Reef Heron ***Egretta gularis***	Resident breeding species	More than 100 birds with 25-30 breeding pairs in the area	Regional Priority
Caspian Tern ***Sterna caspia***	Migratory, occasional breeding	10-15 individuals regularly seen, possibly breeding	Regional Priority
Osprey ***Pandion haliaetus***	Resident breeding	5-6 pairs nesting in and around	Regional Priority
Great Stone Plover ***Esacus recurvirostris***	Migrant	1-2	First record for UAE from Bu Syayeef in 2011 and again in 2012 from the same area
Crab Plover ***Dromas ardeola***	Migratory breeding species in the UAE	Regularly seen during breeding season	Regional Priority
Socotra Cormorant ***Phalacrocorax nigrogularis***	Resident breeding	Several individuals regularly seen	Globally Threatened (VU)
Black-tailed Godwit ***Limosa limosa***	Migratory	Few birds are regularly seen	Near-threatened (NT)

Several other important bird species such as Crab plovers (*Dromas ardeola*), Eurasian Curlew (*Numenius arquata*), Swift Tern (*Sterna bergii*), Lesser Crested Tern (*Sterna*

bengalensis) Western Reef Heron (*Egretta gularis*, Black-winged Stilt (*Himantopus himantopus)* and Marsh harrier (*Circus aeruginosus*) are commonly seen in the area.

Apart from the species and groups mentioned many terns, gulls, pipits, wagtails are also encountered in the area. In 2011, a new species of bird; the Great Stone Plover was first recorded from the area, as a new addition to UAE species list.

2.4.3 Natural processes

The natural tidal cycle is essential in bringing the nutrients and maintaining the productivity of the tidal mudflats and hence providing feeding opportunities to a variety of shorebirds and also in the development of the salt marshes and cyanobacterial mats.

Mangroves are generally found in areas that get under water during high tide and where the waves are not very strong. As the area under consideration is shallow the waves are not very strong and most of the areas are shielded from any kinds of waves originating in high seas by the land forms that act as breakwaters before they enter the area.

2.5 Ecological significance

The Bu Syayeef is an ecologically important zone for biodiversity conservation in the Emirate due to a combination of factors. Mangroves, sea grass and vast stretches of intertidal mudflats are important elements which provide enormous ecological benefits ranging from nursery for fishes to nesting areas for birds and extremely productive area and acting as source of food for variety of species, particularly the migratory birds, which feed and rest on the vast intertidal flats of the area. The area supports highest concentration of the flamingos in the UAE and was also the site for the biggest breeding event of the Greater Flamingo in the entire Arabian Peninsula.

2.6 Current land-use

The Bu Syayeef and its surrounding area are under intensive use, ranging from fishing to dredging and industrial development.

2.7.1 Fishing

Fishing in the Bu Syayeef, though recreational is a regular activity in and around the area. Fishing takes place in traditionally used nets but at a very small scale. Large number of recreational fishermen can be seen in the area on weekends and public holidays and is a regular source of disturbance to the birds. The activity may have significant implications for birds breeding in the area, especially Greater Flamingos which are highly sensitive to human disturbance.

2.7.2 Dredging

Dredging and deepening of channel is a regular activity in the area and has considerable impact on the overall ecology by altering the circulation, water current, increasing the turbidity. Some of the consequences of such activities in combination with the discharge of effluents can be seen in form of regular fish kills from the area.

2.7.3 Industrial development

The area is particularly sensitive from the planned economic development on the south side of the channel. The proposed Abu Dhabi Industrial City (ICAD IV or III) and associated maritime time traffic will have implications for the important coastal habitat. Recent development of real estate in the area is debatable as far as costs and benefits viz-a-viz nature conservation. Large-scale industrial development at the entrance of channel, further development of the port and plans for the development of industrial city of Abu Dhabi (ICAD) are some of the major industrial development. Planned Etihad Railway line in the area will cater to the existing industrial development in the area, but will also encourage new industrial development in and around the proposed protected area.

2.7.4 Threats

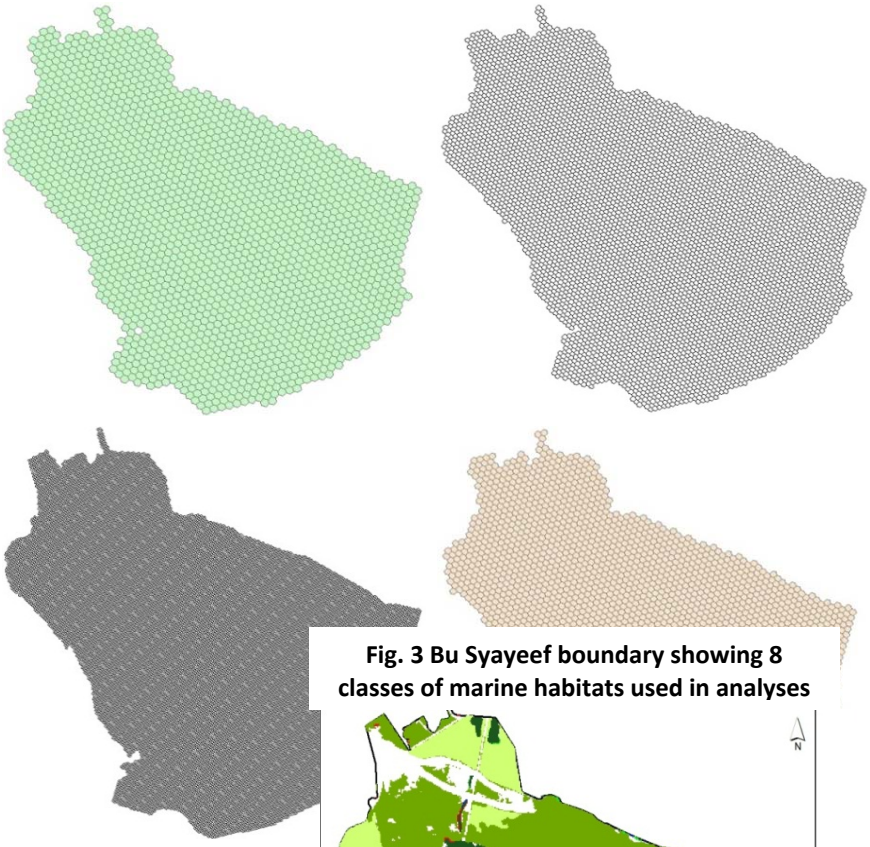
Dredging and deepening of channel is a regular activity in the area and is a constant threat for the area, both in terms of disturbance as well as by changing the hydrological regimes which can have catastrophic impacts on the ecology, well-being and functioning of this area. Discharge of effluents, increased dredging leading to higher sediments is already causing high fish mortality.

3. APPROACH AND METHODOLOGY

Description of site and key features, mainly on flamingos and other birds are based on regular data collected by EAD team from the area. We used existing EAD data on key conservation elements of the area as a source of spatial data in the planning exercise.

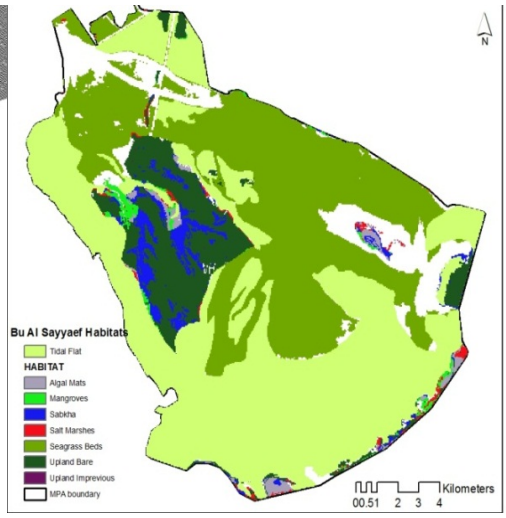
We used existing boundary of the once proposed Bu Syayeef Marine Protected Area (BSMPA) as the primary polygon for the study region. Planning units were generated using the extension Repeating Shapes (Jeness, 2006) ArcGIS extension in ArcMap 10 (ESRI 2010) to produce four layers consisting of series of hexagons with an area of 1, 5, 10 and 15 ha (Fig. 2). The dredging cost metric was calculated by summing the values in the risk of dredging channels using the Summarize Zones function in ArcGIS. Conservation features data were imported into Marxan using QGIS and QMarxan plugin for each planning unit size. Boundary file was calculated using ArcGIS extension BMER.

Fig. 2 Four levels of planning units used in the analysis



Altogether we used 10 conservation features for the assessment and these included marine habitats i.e. mangrove, tidal flats, sea grass beds (Fig. 3), Greater flamingo counts in Bu Syayeef from June 2006 to December 2011 and Greater Flamingo satellite tracking locations from December 2005 to October 2011.

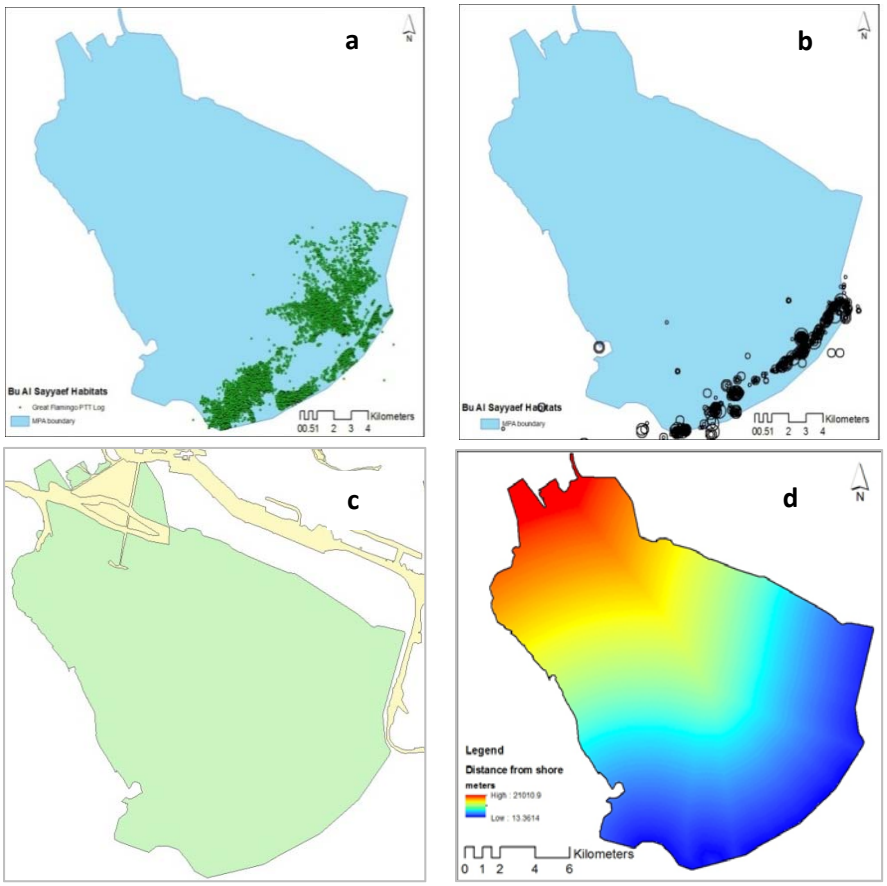
Fig. 3 Bu Syayeef boundary showing 8 classes of marine habitats used in analyses



Two cost elements were included in the analysis. Dredging of the channels in the vicinity was included as first cost due to their current and future impacts on the proposed area and the distance of each planning unit from the shore (Fig. 4). The second cost is more an operational cost in terms of day to day management of the area.

We used Marxan (Ball et al. 2009) systematic conservation planning software in our approach to identify the best possible zoning plan for the proposed area (Ball, 2000) to identify a spatial configuration of zones that would ensure the fulfillment of management objectives, maintain predetermined conservation features and incur the lowest possible cost either from logistic or stakeholders interaction points of view.

Fig. 4 Bu Syayeef boundary showing a) locations of satellite tracked Greater Flamingo b) counts of Greater Flamingo c) dredging channels used as cost element in the analyses and d) distance from shore, as a surrogate to management cost used in the analyses



Marxan uses a simulated annealing approach to select a near-optimal solutions that meet predetermined conservation targets according to defined conservation management objectives whilst minimizing costs or conflicts that might arise from other stake holders having interests within the proposed protected area. The software also allows the user to influence the fragmentation level of the converged solution. Fragmentation, defined as the number of small, isolated patches of planning units (Smith et al. 2010) was considered in the solution as highly fragmented solutions have a higher boundary edge length (Ball, 2000), as fewer of their boundaries are shared with other selected planning units. Marxan calculated the total cost for solutions that met all the targets as the combined planning units cost plus the boundary length cost. Fragmentation levels of the portfolios are identified by adjusting the Boundary Length Modifier (BLM) value. Higher BLM value increases the relative importance of the boundary cost compared to the planning unit costs, and so produces less fragmented but

Table 1 Conservation targets tailored towards objective of Greater Flamingo (GF) conservation

ID	Name	Target	spf
1	Tidal flats	50%	1
2	Algal Mats	50%	1
3	Mangroves	70%	1
4	Sabkhas	20%	1
5	Salt Marshes	50%	1
6	Sea grass beds	30%	1
7	Upland Bare	50%	1
8	Upland Impervious	50%	1
9	GF tracking Log	70%	1
10	GF count	50%	1

SPF – species penalty factor

more extensive solutions. The simulated annealing process involves running the software a number of times and produces a near-optimal portfolio per run. Marxan then identifies the best solution as the one with the lowest cost and produces a selection frequency output, which counts the number of times each planning unit appeared as part of the different portfolios (Ball, 2000).

Higher BLM increases the score and the cost of the final solution to be unnecessarily highland thus an inefficient, while using too low BLM value would result in a fragmented solution of scattered isolated patches rendering logistics of managing the proposed protected area unrealistic. Calibration function of Zonae Cogito was used to find out the optimal BLM value. Boundary Length Multiplier (BLM) calibration was done using range of values 1 to 10000 over 15 runs. Calibration with the same values was done for the 4 planning units' sizes. Conservation targets were set towards the main objective of conserving the primary species in the proposed protected area i.e. the Greater Flamingo. This implies that flamingo's breeding and feeding grounds given the highest values while other habitats and elements of biodiversity kept at representative levels. Table 1 shows the conservation targets specified for the analysis. Number of runs were set to 100 so that to easily report the resulting selection frequency for each planning unit as a percentage. Number of iterations was set to 10000 to ensure efficient computation time; given the computational powers available and yet not to compromise sufficient replication. MARXAN ver. 1.8.0 (32 bits) was used to conduct the analysis.

We performed sensitivity analysis to determine which group of conservation features is more influential and effectively drive the selection process. In addition, the effect of this driving feature on the cost of the solution is also investigated. Sensitivity is considered by dividing the features into groups as follows:

- Direct Flamingo features (Greater Flamingo counts and tracking log)
- Primary Flamingo Habitat features (Tidal mudflats – feeding and breeding habitats)
- Secondary Habitats (Mangroves and sea grass beds)
- All other features.

Targets of all features were set to zero except for the feature under consideration and a Marxan run was performed with all parameters constant. The same was done to all features.

4. MARXAN RESULS

Marxan produced four different solutions for the four different planning unit size (Fig. 5). The spatial configuration and the other parameters varied significantly among them. In terms of total captured conservation features versus total specified targets; the 15 ha solution was the best performing one as it exceeded the specified limit by only 18%. The

worst performing solution in this aspect was the 5 ha solution where it captured 59% conservation features more than the specified targets (Table 2).

Table 2 Different solutions and the captured features compared to specified target

Solutions	Total Target specified	Total Targets Captured	Percentage
1 ha	121193404	159635448	131.72%
5 ha		193437221	159.61%
10 ha		145463981	120.03%
15 ha		143939301	118.77%

The outcome of the four analysis options highlights that 5 ha solution have exceeded 9 targets out of 10, followed by 1 ha option which exceeded 7 targets out of 10. Options 10 ha and 15 ha both performed better, and exceeded only 6 targets out of ten. Looking on the overall conservation features captured by different solutions and how they exceed the targets in total shows that 15 ha solution is the best option as it captures the nearest score to target value (Table 3).

Table 3 different solutions and their corresponding parameters

Solutions	Scores	Cost	Connectivity
1 ha	225181235.6	409142	5298554
5 ha	24566396.27	844185	2390533
10 ha	420026975.9	72772923	1702526
15 ha	104383765.3	64890775	1394592

Score is a diagnostic produced by MARXAN as an overall measure to compare different solutions or scenarios where it collectively takes cost, penalty and fragmentation in consideration. Lower score would generally mean better solution. Considering the different solutions from the score point of view reveals that 5 ha solution has achieved the lowest score among all solutions followed by 15 ha solution as second.

4.1 Final Zoning Solution

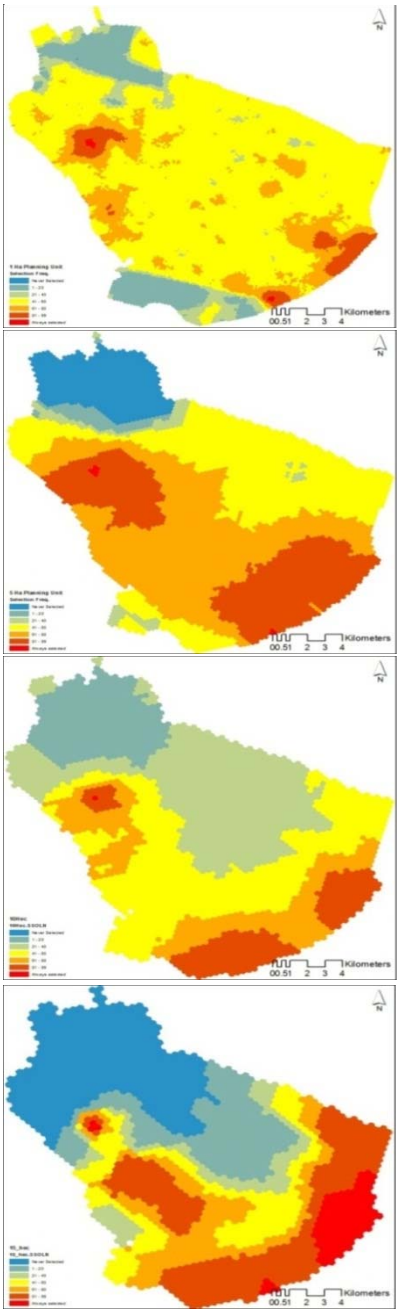
In general the spatial configuration of 1ha solution is the least robust and unacceptable from the management point of view since it is highly fragmented and isolated patches are not uncommon within it. In addition, it captures conservation features versus specified targets more than others provided by other planning unit sizes. For the second 5ha solution the spatial configuration was also inconvenient as it captures most of the area under consideration and leaves only two unselected patches in the north east and south west. It is not a good alternative although it achieved the lowest score but yet the highest percentage of the planning units being selected (82%). This leaves with two alternatives to select from; the 10 ha and 15 ha solutions. The 15 ha solution is preferred over the 5 ha solution for the following reasons:

1) 15 ha solution in more spatially smart where it captures more units marked as irreplaceable (selection frequency = 100)

2) It records a lower general score compared to the 5 ha solution indicating better efficiency

Thus, based on the results of Marxan analyses it is recommend to adopt the 15 ha solution as zoning plan for the proposed protected area to be established in Bu Syayeef. This is the best obtained result, which captures maximum conservation features (Fig. 5) and is more efficient from management perspective. It is also recommended to add a few kilometer span around the selected area as a Buffer Zone.

Fig. 5 Results of Marxan analysis for 4 different planning unit sizes to identify best solution for the proposed protected area



a) 1 ha PU soultion

Very fragmented solution with many isolated patches, and relatively high boundary length increasing the total cost. The solution shows high flexability as very few units are identified as significant irreplaceaple units (159.27 Km², 55.93% PU)

b) 5 ha PU solution.

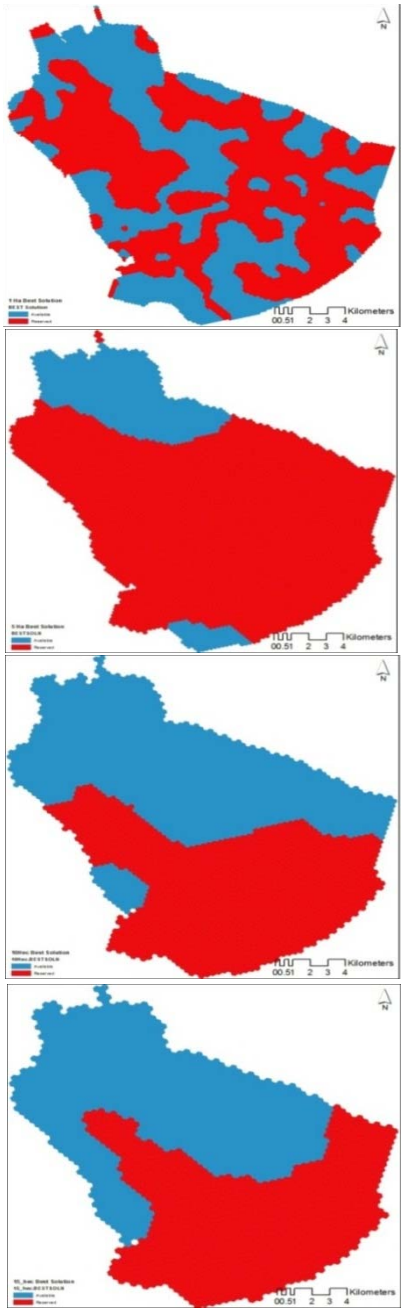
Sptially intricate solution in terms of the selected PUs configuration but with a major disadvantage of including very large number of PUs and thus bigger area (240.75 Km², 82.11% PU) and much of inflexibility.

c) 10 ha PU solution.

More sptially accepted solution compared to the above 2 but with a major disadvantage of Highest score amongst all other solutions (144.60 Km² , 48.54% PU).

d) 15 ha PU solution.

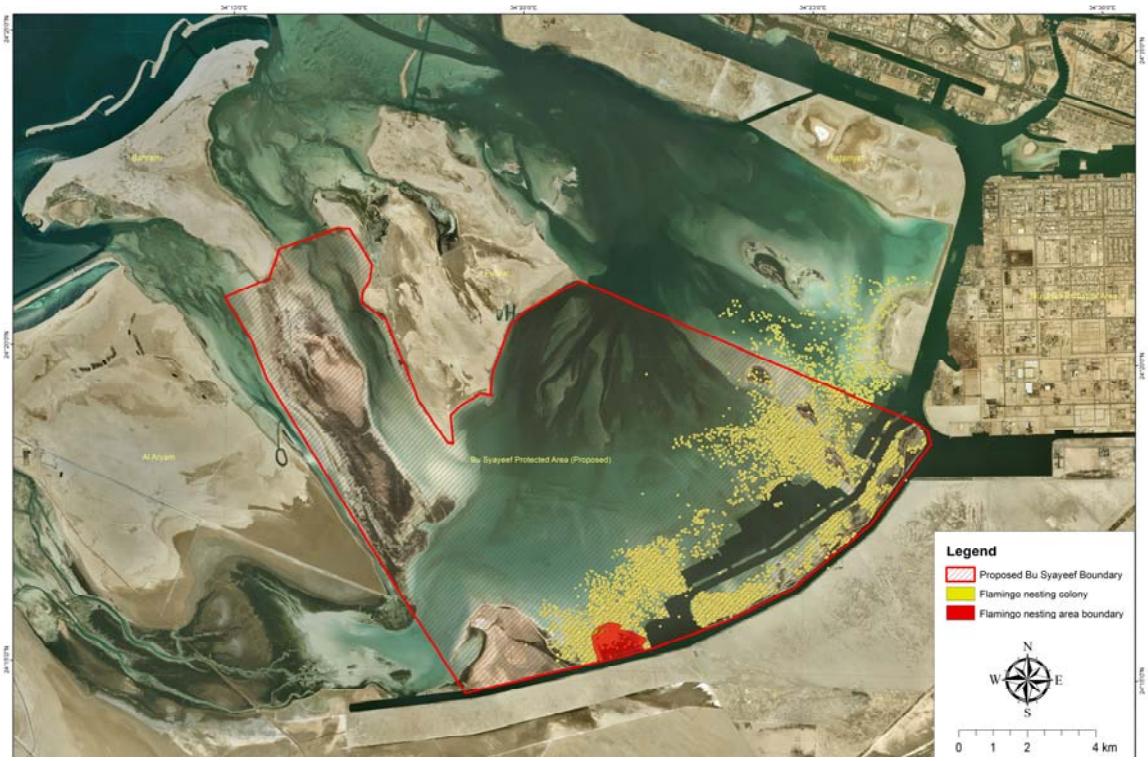
Most sptially accepted solution, with relatively low score and selected targets nearest to minimum and lowest captured area. (144.30Km², 48.00% PU).



4. AREA AND PORPOSED BOUNDARIES

The total area of the proposed Bu Syayeef Flamingo and Waterbirds Sanctuary 145.4 km^2 (Fig. 6). The proposed area will protect most of the inter-tidal mudflats, mangroves and flamingo feeding and resting areas. The area of 145.4 km^2 is the total area that is proposed based on the results of Marxan and also considering other challenges and opportunities in the area.

Fig. 6 Proposed area for the proposed Bu Syayeef Flamingo and Waterbirds Sanctuary



By protecting the area will serve the following functions:

- Protect the natural values of the area
- Protect the overall health and integrity of enclosed terrestrial and marine systems
- Exclude development of any form and any other activities which may be detrimental to the ecological values contained within
- Wherever possible restore areas which have undergone degradation
- Provide an opportunity for further research, monitoring, educational and eco-tourism activity in the area

5. LEGAL FRAMEWORK AND BACKGROUND

5.1 National Legislation

Creation and establishment of protected areas are covered by various local legislations and are mandated to the Environment Agency – Abu Dhabi. In accordance with Law # 4 (1996) for the establishment of Environment Agency- Abu Dhabi, the Agency's mandate is covered by the following:

Article 3 (13) - *To evaluate the impact of hunting and fishing in Abu Dhabi Emirate in wildlife and to recommend solutions to prevent extinctions of wildlife, to recommend management plans and to establish protected zone*

Articles 3 (15) - *To establish and run parks, reserved and protected areas and implement rules and regulations to protect these areas.*

Establishment and management of the protected areas are also covered under Federal Law # 24 (199) for 'Protection and Development of the Environment'. The following articles are relevant to the creation of the protected area:

Article 63 - *Reserve areas in the State and the boundaries of each area shall be determined by a decree issued by the Cabinet of Ministers or the Competent Authorities. Certain areas may be considered reserve areas in accordance with a proposal from the Agency.*

Article 64 - *Works, activities and acts prohibited in reserve areas which may lead to damage or deterioration of the natural environment, cause harm to wild or marine life or affect their aesthetic value, shall be determined by a decree issued by the Competent Authorities in coordination the Agency, The following shall be particularly prohibited:*

1. *Hunting, transporting, killing or harming wild and marine creatures or undertaking activities leading to their eradication*
2. *Damaging or destroying geological or geographical formations or areas considered natural habitat to animal and plant species as a result or increase or growth of such species*
3. *Introducing foreign species into the reserve*
4. *Polluting the soil, water or air of the reserve*
5. *Military maneuvers and shooting practices*
6. *Cutting trees or eroding soil*
7. *Amusements, recreation and sports functions which can kill or harm or have negative impact on natural live*

8. *All that can disturb the natural balance of such reserve*

It is also prohibited to set up establishments, buildings or construct roads, drive vehicles or practice any agricultural, industrial or commercial activities in the reserve areas without the permission of the Competent Authorities.

Article 65 - *Wild and marine animals and birds using reserves for nesting, hatching or habituation shall be protected in accordance with the provisions of this Law.*

Article 66 - *It is prohibited to practice any activities, acts or works in areas surrounding the reserves if such practices affect the environment of the reserve or their natural phenomena, without permission from the Competent Authorities in consultation with the Agency. The Executive Order shall specify the bases for determining the surrounding areas.*

Article 67 - *The Agency shall, in accordance with the Competent Authorities, undertake to supervise the activities required for the maintenance of reserves in the State and shall particularly undertake the following:*

1. *Contributing to the preparation of programme and studies needed for the development of the reserve*
2. *Establishment of the standards and controls for monitoring environment phenomena and confirming and registering land and marine creatures in the reserve*
3. *Coordination of activities for the management and development of the reserves*
4. *Informing and educating the public about the objectives and purposes of the establishment of natural reserves*
5. *Exchange of information and experience in this filed with other countries, international organisations and Concerned Parties in the State.*

Article 68 - *Research centers, scientific institutions, university and others specialized parties shall, in coordination with the Agency take interest in the issues of biological diversity, preservation the indigenous species, conducting studies and research and [proposing the controls and procedures to be followed for the preservation and investment in such species without leading to their depletion and protection the moral, social and economic lawful rights of the State.*

5.1 International Conventions & obligations

Internationally the Convention on Biological Diversity (1992), to which UAE is a signatory, requires all member states to, among other things, establish system of protected area and develop guidelines for the selection, establishment and management of the protected areas.

6. INSTTITUTIONAL FRAMEWORK

Creation of Bu Syayeef Flamingo & Waterbirds Sanctuary or Bu Syayeef Wildlife Sanctuary would be of significant importance and interest for several key stakeholders who have interest and stakes in the area. As a Competent Authority for all environmental issues within the Emirate of Abu Dhabi, the Environment Agency – Abu Dhabi (EAD) is mandated to identify, select and establish protected areas in the Emirate.

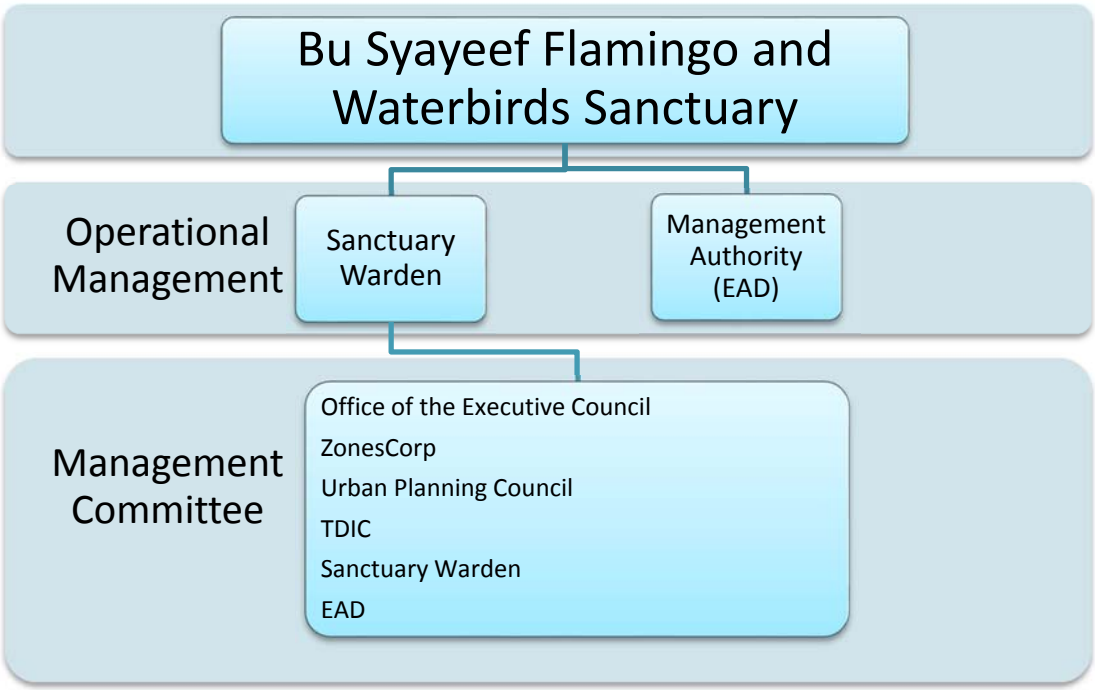
In line with this mandate, EAD would be responsible for putting in place the management structure of the proposed protected area to ensure that the area, once formally declared, is properly protected and managed, as per the international best practices and guidelines.

In order to ensure the interests of key stakeholders within the proposed protected area, EAD would establish a local committee, drawn from the following entities in the Emirate:

- Office of the Executive Council
- ZonesCorp
- Urban Planning Council
- TDIC
- Sanctuary Warden
- EAD

One of the main responsibilities of the committee would be ensure that a management plan for the area is developed and adequate measures are taken to ensure that the area is well protected and adequately resourced to implement the management plan. The committee will also ensure that issues, concerns and conflicts over access to the site in the wake of development in the vicinity is resolved in accordance with the legal basis and purpose for which the protected area is created.

7. MANAGEMENT STRUCTURE



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APPENDIX I

Checklist of birds recorded in Bu Syayeef

Common Name	Scientific name	Arabic name	Family	Order
Egyptian Goose	*Alopochen aegyptiacus*	إوزة مصرية	Anatidae	Anseriformes
Shoveler	*Anas clypeata*	الكيش (أبو مجرف	Anatidae	Anseriformes
Great Stone Plover	***Esacus recurvirostris***		**Burhinidae**	**Charadriiformes**
Greater Sand Plover	*Charadrius leschenaultii*	قطقاط (زقزاق) الرمل الكبير	Charadriidae	Charadriiformes
Grey Plover	*Pluvialis squatarola*	قطقاط رمادي	Charadriidae	Charadriiformes
Kentish Plover	*Charadrius alexandrinus*	قطقاط (زقزاق) اسكندري	Charadriidae	Charadriiformes
Lesser Sand Plover	*Charadrius mongolus*	قطقاط (زقزاق) الرمل الصغير	Charadriidae	Charadriiformes
Red-wattled Lapwing	*Vanellus indicus*	قطقاط أحمر اللغد	Charadriidae	Charadriiformes
Ringed Plover	*Charadrius hiaticula*	قطقاط (زقزاق) مطوق	Charadriidae	Charadriiformes
Crab Plover	*Dromas ardeola*	الحنكور	Dromadidae	Charadriiformes
Oystercatcher	*Haematopus ostralegus*	آكل المحار	Haematopodidae	Charadriiformes
Black-headed Gull	*Larus ridibundus*	نورس أسود الرأس	Laridae	Charadriiformes
Great Black-headed Gull	*Larus ichthyaetus*	نورس أسود الرأس كبير (نورس السمك	Laridae	Charadriiformes
Lesser Black-backed (Baltic) Gull	*Larus fuscus*	نورس أسود الظهر صغير	Laridae	Charadriiformes
Slender-billed Gull	*Larus genei*	نورس مستدق المنقار	Laridae	Charadriiformes
Avocet	*Recurvirostra avosetta*	النكات	Recurvirostridae	Charadriiformes
Black winged Stilt	*Himantopus himantopus*	أبو المغازل	Recurvirostridae	Charadriiformes
Bar-tailed Godwit	*Limosa lapponica*	بقويقة مخططة الذيل	Scolopacidae	Charadriiformes
Black-tailed Godwit	*Limosa limosa*	بقويقة سوداء الذيل	Scolopacidae	Charadriiformes
Common Sandpiper	*Actitis hypoleucos*	طيطوي اعتيادي	Scolopacidae	Charadriiformes
Curlew	*Numenius arquata*	كروان الماء	Scolopacidae	Charadriiformes
Curlew Sandpiper	*Calidris ferruginea*	طيطوي مقوس المنقار	Scolopacidae	Charadriiformes
Dunlin	*Calidris alpina*	الدريجة	Scolopacidae	Charadriiformes
Greenshank	*Tringa nebularia*	طيطوي أخضر الساق	Scolopacidae	Charadriiformes
Redshank	*Tringa totanus*	طيطوي أحمر الساق	Scolopacidae	Charadriiformes
Ruff	*Philomachus pugnax*	حجوالة	Scolopacidae	Charadriiformes
Sanderling	*Calidris alba*	المدروان	Scolopacidae	Charadriiformes
Spotted Redshank	*Tringa erythropus*	طيطوي أحمر الساق أرقط	Scolopacidae	Charadriiformes
Terek Sandpiper	*Xenus cinerea*	طيطوي مغبر	Scolopacidae	Charadriiformes
Turnstone	*Arenaria interpres*	قنبرة الماء	Scolopacidae	Charadriiformes
Whimbrel	*Numenius phaeopus*	كروان الماء الصغير	Scolopacidae	Charadriiformes
Bridled Tern	*Sterna anaethetus*	خطاف البحر الأسحم	Sternidae	Charadriiformes
Caspian Tern	*Sterna caspia*	خطاف بحر قزويني	Sternidae	Charadriiformes
Common Tern	*Sterna hirundo*	خطاف بحر اعتيادي	Sternidae	Charadriiformes
Gull-billed Tern	*Gelochelidon nilotica*	خطاف بحر نيلي (الأويق	Sternidae	Charadriiformes

Lesser Crested Tern	*Sterna bengalensis*	خطاف بحر متوج صغير	Sternidae	Charadriiformes
Little Tern	*Sterna albifrons*	خطاف بحر صغير	Sternidae	Charadriiformes
Saunders' Little Tern	*Sterna saundersi*	خطاف بحر سوندرز	Sternidae	Charadriiformes
Whiskered Tern	*Chlidonias hybridus*	خطاف مستنقعات (مرشك) ملتحي	Sternidae	Charadriiformes
White-cheeked Tern	*Sterna repressa*	خطاف بحر أبيض الخد	Sternidae	Charadriiformes
Grey Heron	*Ardea cinerea*	بلشون رمادي	Ardeidae	Ciconiiformes
Striated Heron	*Butorides striatus*	بلشون أخضر الظهر (مخطط	Ardeidae	Ciconiiformes
Striated Heron	*Butorides striatus*	بلشون أخضر الظهر (مخطط	Ardeidae	Ciconiiformes
Western Reef Heron	*Egretta gularis*	بلشون الصخر (البحر	Ardeidae	Ciconiiformes
Greater Flamingo	*Phoenicopterus roseus*	النحام (البشروش) الكبير	Phoenicopteridae	Ciconiiformes
Spoonbill	*Platalea leucorodia*	أبو ملعقة	Threskiornithidae	Ciconiiformes
Collared Dove	*Streptopelia decaocto*	يمام مطوق	Columbidae	Columbiformes
Laughing Dove	*Streptopelia senegalensis*	يمام ضاحك (فاختة النخيل	Columbidae	Columbiformes
Rock Dove	*Columba livia*	حمام جبلي (يضم الحمام المستوحش	Comubidae	Columbiformes
Turtle Dove	*Streptopelia turtur*	القمري	Comubidae	Columbiformes
Kingfisher	*Alcedo atthis*	صياد السمك (الرفراف	Alcedinidae	Coraciiformes
Marsh Harrier	*Circus aeruginosus*	مرزة البطائح	Accipitridae	Facloniformes
Osprey	*Pandion haliaetus*	عقاب نساري (عقاب السمك	Pandionidae	Facloniformes
House Crow	*Corvus splendens*	غراب دوري	Corvidae	Passeriformes
Barn Swallow	*Hirundo rustica*	سنونو	Hirundinidae	Passeriformes
White Wagtail	*Motacilla alba*	ذعرة (فتاح) بيضاء	Motacillidae	Passeriformes
Black-eared Wheatear	*Oenanthe hispanica*	أبلق أسود الأذن	Muscicapidae	Passeriformes
House Sparrow	*Passer domesticus*	عصفور دوري	Passeridae	Passeriformes
White-cheeked Bulbul	*Pycnonotus leucogenys*	بلبل أبيض الخد	Pycnonotidae	Passeriformes
Common Mynah	*Acridotheres tristis*	مينة إعتيادية	Srurnidae	Passeriformes
Nightingale	*Luscinia megarhynchos*		Turdidae	Passeriformes
Great Cormorant	*Phalacrocorax carbo*	غراب البحر	Phalcrocoracidae	Pelecaniformes
Socotra Cormorant	*Phalacrocorax nigrogularis*	لبحر السوقطري	Phalcrocoracidae	Pelecaniformes